AMSAT News Service Weekly Bulletins
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SB ALL @ AMSAT $ANS-055.01
WO-18 TAKES EARTH PICTURES

HR AMSAT NEWS SERVICE BULLETIN 055.01 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 24, 1990
TO ALL RADIO AMATEURS BT

WEBERSAT-OSCAR-18 Successfully Takes Pictures Of Earth With Its CCD Camera

Chris Williams (WA3PSD) reports from the Weber State University (WSU) Ground Command Station in Ogden, UT that WO-18 took several excellent pictures from outer space this week with its onboard Charged Coupled Device (CCD) camera experiment. One picture of particular interest was of the Indian Ocean which, after color recovery by WEBERWARE 1.0 software, showed plenty of blue ocean and lots of clouds. Since it has been determined that the CCD camera is working well along with the rest of WO-18's satellite subsystems, officials at WSU's Center for Aerospace Studies (CAST) have declared WO-18 to be a major success. Two weeks ago, however, it was not definite weather the CCD was working properly since the first few pictures were either totally dark or completely white. After investigation, it was theorized that the camera lens was either pointing off to deep space or straight at the sun! Once the schedule for taking pictures was randomnized a bit, WO-18 finally was pointed at the earth when a picture was taken of the Himalayas. Since that first good picture on February 18th, WSU students have eagerly awaited each pass to see what new pictures of the earth will be seen. Chris reports that with each pass of WO-18, they are collecting about 100 Kbytes of data. They have now collected so much imaging data that they are running out of disk storage space.

Early in the week of March 13, WSU will be releasing its Beta test version of WEBERWARE 1.0 software for general use. This software will be available from the AMSAT Software Exchange as soon as it is released. Radio amateurs are encouraged to continue to collect imaging data from WO-18. Watch for more information about the release of WEBERWARE 1.0 in future AMSAT News Service (ANS) bulletins.

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SB ALL @ AMSAT $ANS-055.02
MICROSAT UPDATE

HR AMSAT NEWS SERVICE BULLETIN 055.02 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 24, 1990
TO ALL RADIO AMATEURS BT

Week five at the AMSAT Satellite Factory (tm) finds the Engineering Team focusing their attention on investigations of the spinning motion of each satellite and the accompanying effects on solar cell illumination and temperature. All four satellites have some degree of wobble motion in addition to spin and magnetic lock. Jim White (WD0E) and a number of other volunteers have put forth considerable effort aiding W3GEY, N4HY, and NK6K in evaluating the telemetry from each satellite to characterize its various motions.

AO-16 seems to have the most wobble of all the MICROSATs. It currently has a rotational period of 690 seconds (which is fairly slow) and a wobble of about 45 degrees. LO-19 takes about 270 second/rev and has a wobble of about 20 degrees. DO-17 is the most stable of all the satellites with its 20 second rotational period and a wobble of about 12 degrees. Data on WO-18 is still

being analyzed. Because WO-18 has two additional trays (a total of 7 electronic platforms) its spin characteristics are more complex and will require further study.

Because of the shortage of real estate and modest power budgets, none of the MICROSATs has an active attitude control system on board e.g., magnetorquing coils such as those used on AO-10, UO-11, AO-13, and UO-14. They do, however, have a set of bar magnets placed along each of the four corners of the spacecraft which will provide some alignment with the earth's magnetic field and will ultimately damp the wobbling motion. In addition, the 70 cm antenna elements on each satellite are painted black on one side and are silver coated on the other side. The purpose of painting only one side is to generate a slight rotational torque due to solar radiation on the MICROSAT to keep the satellites rotating. This solar torque drives each satellite in constant rotation and thus prevents one part of the spacecraft from becoming too hot or too cold.

Once it has been determined that each satellite's battery charging and temperature parameters have stabilized, preliminary operating schedules will be drafted and the satellites released for general use. Look to ANS for late breaking news on the commissioning of the MICROSATs.

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SB ALL @ AMSAT $ANS-055.03
AO-13/AO-10 TRANSPONDER SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 055.03 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 24, 1990
TO ALL RADIO AMATEURS BT

New AO-13 Transponder Schedule thru 09-May-90

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         Mode-B  : MA 000 to MA 165
         Mode-JL : MA 165 to MA 195
         Mode-S  : MA 195 to MA 200
         Mode-BS : MA 200 to MA 205
         Mode-B  : MA 205 to MA 256
         Omnis   : MA 240 to MA 060

    BLON = 207.3  and  BLAT = 2.3   for 05-Mar-90
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From 21-Feb-90 to 21-Mar-90 there will be an OFF period from MA 20 to MA 90 due to solar eclipsing. The length of eclipses vary from 12 to 89 minutes. Only the Mode-S transponder and the Mode-B beacon will be on from MA 195 to MA 200.

AO-10 is currently experiencing solar eclipses during major portions of it orbit and until further notice its transponder is not available for use.

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SB ALL @ AMSAT $ANS-055.04
OPERATIONS NET SCHEDULE

HR AMSAT NEWS SERVICE BULLETIN 055.04 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 24, 1990
TO ALL RADIO AMATEURS BT

New AMSAT-NA Operations Net Schedule Announced

AMSAT Operations Nets are planned for the following times. Mode B nets are conducted on an AO-13 downlink frequency of 145.950. Mode J/L nets are conducted on an AO-13 downlink frequency of 435.970. All nets in the current cycle occur on Saturday U.S. time.

Date UTC	Time UTC	Phs	Mode	NCS
03-Mar-90	18:00	224	B	WA4UPD (tentative)
11-Mar-90	04:30	120	B	N5BF
17-Mar-90	13:30	215	B	N5BF
25-Mar-90	04:00	200	B	??

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SB ALL @ AMSAT $ANS-055.05
FO-20 PROGRESS REPORT

HR AMSAT NEWS SERVICE BULLETIN 055.05 FROM AMSAT HQ
SILVER SPRING, MD FEBRUARY 24, 1990
TO ALL RADIO AMATEURS BT

FO-20 Progress Report

The news this week from JARL is that FO-20's electrical power subsystem (EPS) is performing better than expected. With FO-20 having been on orbit for almost three weeks, the Mode JA and JD transponders have been operating simultaneously. In the case of Mode JD, there is the additional current drain caused by having 1 Mbyte of RAM memory also on line. JARL Ground Command Station operator JK1VXJ reports that with both transponders are operating and all the RAM memory banks are on line, the power used is only slightly more than the EPS system can deliver. He also says that when FO-20 is in a full-sun condition, the EPS system can deliver the power necessary without any problem. Another interesting aspect to FO-20 life so far is the number of Single Event Upsets (SEU) or bit flips caused by high energy particles bombarding FO-20's RAM memory banks. The Error Detection and Correction (EDAC) circuitry has now recorded at least 3 to 5 bit flips due to this phenomenon. The EDAC circuitry can correct only one bit flip at a time per byte of memory.

From a Mode JD operation standpoint there is a problem that JK1VXJ would like to bring to the attention of all Mode JD users: a problem called "ZOMBI's." This term refers to stations that connect to FO-20's packet radio Mode JD mailbox system but do not send a disconnect before they have Loss of Signal (LOS). By typing the letter U when connected, JK1VXJ says he sees that there are still stations connected to the packet transponder. After a while, when the number of connected stations reaches 16, JK1VXJ says that even the Ground Command Station cannot connect! When operating Mode JD, please be sure you disconnect before LOS.

JK1VXJ reports that as of last weekend (17 February) he had reached the following milestones:

1. The BBS program written for FO-12 is now modified so that the CPU utilizes the full 4 RAM banks or 1 Mbyte total of memory. The modified BBS program was loaded to FO-20 during the February 17th weekend.

2. The ground based FO-20 software loader was also modified to improve its efficiency.

3. The ground based FO-20 engineering model is now operational and is serving as a test bed for "soon to be" loaded on-board software.

4. The Whole World Diary (WOD) function is added to BBS program and the program is being evaluated on the engineering model mentioned above. This "BBS with WOD" program will be loaded to FO-20 shortly.

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